

# ND Acute Stroke Treatment Guidelines

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**Fax this packet as soon as possible to the appropriate number below with the following documents:**

- Lab
- EKG
- NIHSS
- Current Medication List
- ED Records
- Any other supporting documents

## One-Call Numbers/Fax for Transfers

### **Altru Health System—Grand Forks**

Phone: 701-780-5206 or 1-855-425-8781

Fax: 701-780-1097

### **Essentia Health—Fargo**

Phone: 701-364-8401

Fax: 701-364-8405

### **Sanford Health – Bismarck**

Phone: 1-855-550-1225

Fax: 701-323-5151

### **Sanford Health—Fargo**

Phone: 877-647-1225

Fax: 701-234-7203

### **CHI St. Alexius Health—Bismarck**

Phone: 701-530-7699 or 1-877-735-7699

Fax: 701-530-7005

### **Trinity Health—Minot**

Phone: 701-857-3000 or 1-800-223-1596

Fax: 701-857-3260

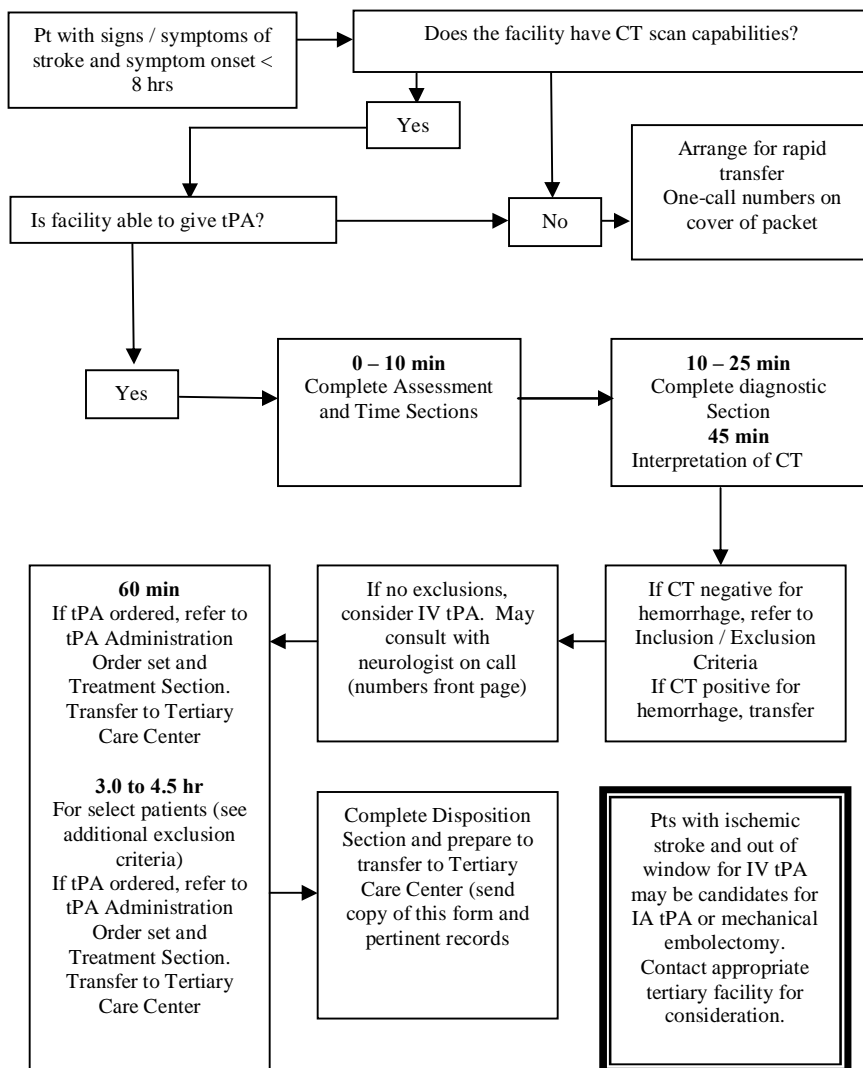
**Reminder!**  
**Please Fax**  
**Documents**

# Acute Stroke Transfer Protocol

Pt Name: \_\_\_\_\_

DOB: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

## Acute Stroke Intervention Algorithm



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- ☐ BP ☐ Pulse
- ☐ V/S q 15 min with neuro checks
- ☐ Continuous Cardiac Monitoring
- ☐ Weight \_\_\_\_\_ kg
- ☐ NIHSS on arrival \_\_\_\_\_  
(If Performed)
- ☐ Keep NPO (including meds)

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Date: \_\_\_\_\_ : \_\_\_\_\_

ED TRIAGE TIME

Date: \_\_\_\_\_ : \_\_\_\_\_

TIME LAST SEEN WELL

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- ☐ CT Head w/o contrast
- CT Results:**
  - ☐ No acute findings
  - ☐ Hemorrhage
  - ☐ New Ischemic Stroke
  - ☐ Other:
- ☐ Stroke Panel - CBC, Platelets, PT-INR / PTT, Chem 8 / BMP, cardiac enzymes, glucose (bedside an option), Creat, Preg test (optional)
- ☐ 12-Lead EKG

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- ☐ If tPA candidate, institute tPA Administration Orders
- ☐ NPO (including meds) until Dysphagia Screen
- ☐ BP Protocol
  - Ischemic: target 185/110
  - Hemorrhagic: target 140/80
  - No sublingual Nifedipine
- ☐ Baseline O2 sat \_\_\_\_\_%
  - O2 to keep SATs >94%
- ☐ Acetaminophen pr for temp >100.4 F
- \* ☐ Two Large-bore IV sites
- \* ☐ Normal Saline 0.9% TKO
- \*If time allows but do not hold up transfer

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- ☐ Transfer to Tertiary Care Facility
- ☐ Activate EMS transfer
- Family / Contact Name & Cell: \_\_\_\_\_
- ED or Primary Physician Name & Number: \_\_\_\_\_

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### tPA Checklist

- ☐ Onset Sx to tPA bolus <3 hrs.
- ☐ Onset Sx to tPA bolus up to 4.5 hrs in select patients (see additional criteria)
- ☐ No hemorrhage on CT scan
- ☐ Thrombolytic Inclusion / Exclusion checklist completed. No exclusions for administering tPA
- ☐ Discussion with patient / family regarding risks/benefits/alternatives
- ☐ Consent obtained from patient / family who are eligible in the 3.0 to 4.5 hr window
- ☐ If Foley needed, insert before tPA given

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### IV tPA

- 0.9 mg/Kg (max does 90 mg)
- 10% total dose as bolus over one minute
- Remainder over 60 minutes
- V/S + neuro checks q 15 min during infusion, then q 15 min x 2 hr, q 30 min x 6 hr, then hourly until 24 hours after treatment
- Maintain BP <185/110
- Repeat CT head if neuro status declines
- No anticoag/antiplatelet for 24 hr

# **Thrombolytic (tPA) Therapy Guidelines** **Eligibility & Contraindications in Acute Ischemic Stroke**

Yes	No	INCLUSION CRITERIA
		Diagnosis of ischemic stroke causing a measurable neurological deficit (loss of motor function, aphasia, etc.). Use caution with major neurological deficits.
		Age >18 years old
		Onset of symptoms <4.5 hours before beginning treatment (stroke onset = time patient last seen well or without symptoms) *see additional exclusion criteria for symptom onset between 3.0 to 4.5 hours
Yes	No	EXCLUSION CRITERIA
		<b>Absolute Contraindications:</b>
		Are the patient's symptoms suggestive of a subarachnoid hemorrhage or does CT show evidence of hemorrhage?
		Does the patient have a history of a previous intracranial hemorrhage?
		Does that patient have untreated cerebral aneurysm, arteriovenous malformation or brain tumor?
		Has the patient experienced head trauma, intracranial surgery, or stroke in the past 3 months?
		Has the patient had an arterial puncture at a non-compressible site in the previous 7 days?
C		Has the patient had recent intracranial or intraspinal surgery?
O		Is the patient's systolic blood pressure > 185 mmHg, despite treatment?
N		Is the patient's diastolic blood pressure > 110 mmHg, despite treatment?
T		Does the patient have any evidence of active bleeding or acute trauma (fracture) on examination?
R		Is the patient taking an oral anticoagulant <u>and</u> is the INR > 1.7 or PT > 15 sec?
A		Has the patient received Heparin within the past 48 hours resulting in abnormally aPTT greater than the upper limit of normal?
I		Is the patient's platelet count <100,000/mm <sup>3</sup> ?
N		Current use of direct thrombin inhibitor or direct factor Xa inhibitors with elevated sensitive laboratory tests (aPTT, INR, platelet count, and ECT; TT; or appropriate factor Xa activity assays)
D		Is the patient's blood glucose level <50 mg/dL?
I		Does the CT show evidence of a multilobar infarction (hypodensity >1/3 cerebral hemisphere)?
C		<b>Relative Contraindications:</b>
A		Are the patient's stroke symptoms only minor or rapidly improving (clearing spontaneously)?
T		Has the patient had a myocardial infarction (MI) in the previous 3 months?
I		Has the patient had any gastrointestinal or urinary tract hemorrhage in the previous 21 days?
O		Has the patient had major surgery or trauma in the previous 14 days?
N		Has the patient had a seizure at stroke onset with postictal residual neurological impairments?
S		Is the patient known or expected to be pregnant or lactating?
		<b>Additional inclusion / exclusion criteria ONLY for those between 3.0 to 4.5 hours (in addition to above)</b>
		Is the patient > 80 years old?
		Is the patient taking oral anticoagulants <u>regardless</u> of INR? (replaces above exclusion criteria)
		Does the patient have a baseline NIHSS score >25?
		Does the patient have a history of diabetes <u>and</u> prior stroke?
		Does the patient have imaging evidence of ischemic injury involving > 1/3 of the MCA territory

 **Gray contraindicated / excluded**

Patient has no contraindication that would exclude patient from receiving tPA within the 3 hour window.

Patient has no contraindications that would exclude patient from receiving tPA within the 3 to 4.5 hour window.

Discussion with the patient / family re: risks/benefits/alternatives\_

Consent obtained from patient and/or family who are eligible for tPA in the 3.0 to 4.5 hour window

(DO NOT delay treatment to obtain consent, no consent is required if patient meets criteria and is unable to sign consent)

MD Signature: \_\_\_\_\_

Date/Time: \_\_\_\_\_

:

(Patient Label)

## NIH Stroke Scale

CATEGORY	SCALE DEFINITION		Date/Time	Date/Time	Date/Time
			Score	Score	Score
<b>1a. Level of Consciousness</b> (alert, drowsy, etc.)	0= Alert 1= Drowsy	2= Stuporous 3= Coma			
<b>1b. LOC Questions</b> (Month, age)	0= Answers both correctly 1= Answers one correctly	2= Answers neither correctly			
<b>1c. LOC Commands</b> (Open, close, eyes, make fist, let go)	0= Performs both correctly 1= Performs one correctly	2= Performs neither task			
<b>2. Best Gaze</b> eyes open, patient follows examiners' fingers/face)	0= Normal 1= Partial Gaze Palsy	2= Forced deviation			
<b>3. Visual</b> introduce visual stimulus (or threat) to patients visual field quadrants)	0= No visual loss 1= Partial hemianopia (blind)	2= Complete hemianopia 3= Bilateral hemianopia			
<b>4. Facial Palsy</b> (show teeth, raise eyebrows, and squeeze eyes shut)	0= Normal 1= Minor paralysis	2= Partial paralysis 3= Complete paralysis			
<b>5. Motor Arm</b> <b>5a. Left Arm</b> (Elevate extremity to 90E and score drift/movement)	0= No drift 1= Drift 2= Some effort against gravity	3= No effort against gravity 4= No movement UN= Amputation or joint fusion			
<b>5b. Right Arm</b> (Elevate extremity to 90E and score drift/movement)	0= No drift 1= Drift 2= Some effort against gravity	3= No effort against gravity 4= No movement UN= Amputation or joint fusion			
<b>6. Motor Leg</b> <b>6a. Left Leg</b> (Elevate extremity to 30E and score drift/movement)	0= No drift 1= Drift 2= Some effort against gravity	3= No effort against gravity 4= No movement UN= Amputation or joint fusion			
<b>6b. Right Leg</b> (Elevate extremity to 30E and score drift/movement)	0= No drift 1= Drift 2= Some effort against gravity	3= No effort against gravity 4= No movement UN= Amputation or joint fusion			
<b>7. Limb Ataxia</b> (Finger, nose, heel down shin)	0= Absent 1= Present in one limb	2= Present in two limbs UN= Amputation or joint fusion			
<b>8. Sensory</b> (Pinprick to face, arm [trunk] and leg—compare side to side)	0= Normal 1= Mild to moderate sensory loss	2= Severe to total sensory loss			
<b>9. Best Language</b> (Name items, describe a picture and read sentences)	0= No aphasia, normal 1= Mild to moderate aphasia	2= Severe aphasia 3= Mute, global aphasia			
<b>10. Dysarthria</b> (Evaluate speech clarity by patients repeating listed words)	0= Normal 1= Mild to moderate	2= Severe dysarthria UN=Intubated			
<b>11. Extinction and inattention</b> (Use information from prior testing to identify neglect or double simultaneous stimuli)	0= No Neglect 1= Partial Neglect	2= Profound Neglect			
<b>Initial</b>					

Initials:  Signature:   
 Initials:  Signature:   
 Initials:  Signature:

(Patient label)

## Blood Pressure Management for Acute Stroke

### tPA or Acute Reperfusion Intervention Patient

Patient is otherwise eligible for IV tPA or other acute reperfusion therapy except BP >185/110 mmHg

**Systolic >185 mmHg or Diastolic >110 mmHg:**

Labetalol 10 to 20 mg IV over 1 to 2 minutes, may repeat x 1; Or

Nicardipine infusion, 5 mg/hr, titrate up by 2.5 mg/hr at 5- to 15-minute intervals, maximum dose 15 mg/hr; when desired BP attained, adjust to maintain proper BP limits

Or

Other agents (hydralazine, enalaprilat, etc) may be considered when appropriate

**If blood pressure is not maintained at or below 185/110 mmHg, do not administer tPA**

### **Management of BP during and after treatment with tPA or other acute reperfusion therapy**

Maintain BP at or below 180/105 mmHg for at least the first 24 hours after IV tPA treatment

Monitor BP q 15 min for 2 hrs from the start of tPA therapy, then q 30 min for 6 hrs, then every hour for 16 hrs

**If Systolic > 180 to 230 mmHg or diastolic 105 to 120 mmHg**

Labetalol 10 mg IV followed by continuous IV infusion 2-8 mg/min; Or

Nicardipine 5 mg/hr IV, titrate up to desired effect by 2.5 mg/hr every 5 . 15 min, maximum 15 mg/hr

**If BP not controlled or diastolic BP > 140 mmHg, consider IV sodium nitroprusside**


**Maintain BP below 180/105 mmHg for at least the first 24 hours after IV tPA treatment**

### Non-tPA Patient

Most patients with ischemic stroke **do not** require treatment for hypertension; however, it is generally agreed that patients with markedly elevated BP may have their BP lowered. A reasonable goal would be to **lower BP by ~15% during the first 24 hours** after onset of stroke. The level of BP that would mandate such treatment is not known, but consensus exists that **medications should be withheld unless the systolic BP is >220 mmHg or the diastolic BP is >120 mmHg**

Avoid hypotension

★ To be initiated at the Critical Access Hospital and continued by EMS. Please highlight or indicate when hand off occurred.

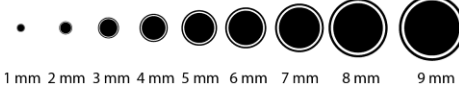
	Baseline	15 min	30 min	45 min	1 hr	1.25 hr	1.5 hr	1.75 hr	2 hr	2.25 hr	2.5 hr	2.75 hr	3 hr	3.5 hr	4 hr	4.5 hr	5 hr
<b>Date:</b>	<b>Time</b>																
BP																	
P																	
R																	
Temp																	
SpO2 RA/O2																	
Pain - H/A																	
<b>Neuro Checks:</b>																	
Level of Consciousness (LOC) A=alert C=confused L=lethargic S=stuporous O=comatose																	
LOC Questions - month / age																	
LOC Commands open/close eyes - squeeze/release hands																	
Right pupil size/response																	
Left pupil size/response																	
Extraocular Movements (EOMs) normal = 0 gaze abnormal in one or both eyes = 1 eyes deviated and fixed = 2																	
Visual fields Normal - recognize finger movement in all 4 quad = N Right visual field deficit = R Left visual field deficit = L																	
Facial symmetry (+/-)																	
Motor arms R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Motor Legs R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Arm sensation(+/-) R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Leg sensation(+/-) R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Speech No wrong words, no slurring = N Wrong words = W Slurring = S																	
RN / EMS initials:																	
<b>Motor Scale</b> 5 - normal strength (no drift) 4 - against some resistance (drift) 3 - overcomes gravity 2 - can't overcome gravity 1 - flicker of muscle 0 - no movement; flaccid	<b>Pupil Size</b>  1 mm 2 mm 3 mm 4 mm 5 mm 6 mm 7 mm 8 mm 9 mm		<b>Pupil Response</b> (+) = present (-) = absent NR = no response		<b>LOC Questions / Commands</b> "You can't teach an old dog new tricks" "No ifs ands or buts about it" 0 = answers/ obeys both correctly 1 = answers / obeys one correctly 2 = incorrect		Patient Label										

★ To be initiated at the Critical Access Hospital and continued by EMS. Please highlight or indicate when hand off occurred.

	5.5 hr	6 hr	6.5 hr	7 hr	7.5 hr	8 hr	8.5 hr	9 hr	10 hr	11 hr	12 hr	13 hr	14 hr	15 hr	16 hr	17 hr	18 hr
<b>Date:</b>																	
<b>Time</b>																	
BP																	
P																	
R																	
Temp																	
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Motor arms R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Motor Legs R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Arm sensation(+/-) R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Leg sensation(+/-) R/L	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
Speech No wrong words, no slurring = N Wrong words = W Slurring = S Mute = M																	
RN / EMS initials:																	

**Motor Scale**

5 - normal strength (no drift)  
4 - against some resistance (drift)  
3 - overcomes gravity  
2 - can't overcome gravity  
1 - flicker of muscle  
0 - no movement; flaccid

**Pupil Size****Pupil Response**

(+) = present  
(-) = absent  
NR = no response

**LOC Questions/Commands**

"You can't teach an old dog new tricks"  
"No ifs ands or buts about it"

0 = answers/ obeys both correctly  
1 = answers / obeys one correctly  
2 = incorrect


Patient Label

	19 hr	20 hr	21 hr	22 hr	23 hr	24 hr
<b>Date:</b>						
<b>Time</b>						
BP						
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SpO2 RA/O2						
Pain - H/A						
<b>Neuro Checks:</b>						
Level of Consciousness (LOC) A=alert C=confused L=lethargic S=stuporous O=comatose						
LOC Questions - month / age						
LOC Commands open/close eyes - squeeze/release hands						
Right pupil size/response						
Left pupil size/response						
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Facial symmetry (+/-)						
Motor arms R/L	/	/	/	/	/	/
Motor Legs R/L	/	/	/	/	/	/
Arm sensation(+/-) R/L	/	/	/	/	/	/
Leg sensation(+/-) R/L	/	/	/	/	/	/
Speech No wrong words, no slurring = N Wrong words = W Slurring = S Mute = M						
RN / EMS initials:						

## Notify Physician

- Neuro status deterioration/mental status change
- Severe headache
- Elevation of Blood Pressure
  - SBP > 180 or DBP > 105
- New onset of nausea or vomiting

Initials	Signature

<b>Motor Scale</b> 5 - normal strength (no drift) 4 - against some resistance (drift) 3 - overcomes gravity 2 - can't overcome gravity 1 - flicker of muscle 0 - no movement; flaccid	<b>Pupil Size</b>  1 mm 2 mm 3 mm 4 mm 5 mm 6 mm 7 mm 8 mm 9 mm	<b>Pupil Response</b> (+) = present (-) = absent NR = no response	<b>LOC Questions/Commands</b> "You can't teach an old dog new tricks" "No ifs ands or buts about it" 0 = answers/ obeys both correctly 1 = answers / obeys one correctly 2 = incorrect	Patient Label
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